**Application Overview:**

The application has been written using Java, with maven as the build tool, and follows Test**-**DrivenDevelopment(TDD) principles. This application is platform-independent and can run on both Windows, Linux. the Java version is 17.

**Application components:**

Model:

* Cell: Represents a single grid cell
* Grid: Manages the game board
* Position: Manages the input position
* GameStates: enum to keep the states

Service:

* InputValidator: Validates user input
* MinesweeperEngine: Handles game flow with logic
* RandomMineGenerator: Responsible for mine placement

View:

* GameConsole: Handles output formatting
* UserInterface: Manages all user interaction

**Build Configuration (pom.xml):**

* JUnit dependency has been added for unit testing.
* Java and junit versions has been specified under the <properties> section.
* Plugins added for test phase and assembly

**Testing:**

* Unit test classes have been created under the test package for model, service and view classes using Junit and mockito.

**Key Features:**

Comprehensive error handling with proper validation.

Recursive auto-reveal for cells with zero adjacent mines.

Separation of concerns with distinct layers (model, service, view).

Replay functionality.

Proper display formatting same as with the example.

**Assumptions:**

Grid Size:  
The grid size must be at least 2x2.  
The user specifies the grid size at the start of the game.  
  
Number of Mines:  
The number of mines is lower than or equal 35% of the total grid squares. If user input 0 mines then no mines will be adding in to the grid.  
The user specifies the number of mines at the start of the game.  
  
User Input:  
User input is expected in the format “A1” for grid coordinates.  
If user enters an invalid input, validations are in place to check and prompt for correct input.

**Steps to run**  
  
1. run the below command within the project folder. it will create the jar file withing the target folder  
**mvn clean package**  
  
2. run the below command to start the application  
**java -jar target/Minesweeper-1.0-SNAPSHOT-jar-with-dependencies.jar**  
3. run this command to execute test cases  
**mvn test**